

E. SUMMARY OF 12th St.-OU4 CHARACTERISTICS

Land use in the immediate vicinity of the 12th St.-OU4 is generally characterized as industrial, with residential dwellings present beyond the nearby gravel pits and asphalt recycling/cement facilities that constitute the adjacent industrial use to the south and southwest. Extensive wetlands are present north and northwest of the OU, and the Kalamazoo River and Plainwell Dam are located to the east and southeast. Access to the landfill is not reliably restricted. Fencing is present along the south side of the landfill only.

Based upon the information available to the MDEQ, the landfill portion of the 12th St.-OU4 is comprised mostly of paper residuals, with some concrete rubble and construction debris, waste lumber, and corroded steel drums. The presence of PCBs at the 12th St.-OU4 is a direct result of waste treatment systems operated at the Plainwell Paper Mill. The PCBs are associated with fine, gray, kaolinite clays that compose the bulk of the paper residuals that were disposed of in the landfill between 1955 and 1981.

The presence of PCB-contaminated residuals, soils, and sediments in areas outside the landfill is due to past or ongoing releases from the landfill. The sides of the landfill contain PCB-contaminated residuals that continue to be eroded into the woodland, wetlands, adjacent property, the former powerhouse discharge channel, and the Kalamazoo River. The possibility of catastrophic failure of any of the sides of the landfill is considered to be an additional potential release.

The cover on the landfill consists of sand, soil, and fly ash and ranges from between two and seven feet thick. This cover was applied only to the top of the landfill, and residual material on the sides remain exposed and have been and are being eroded into areas outside the landfill. The maximum thickness of the residuals within the landfill at the locations sampled is approximately 28 feet. There is perched PCB-contaminated leachate present in the landfill, due to the relatively low permeability of the residuals.

The upper portion of the surficial aquifer consists of sand and gravel, which is typical for this area. Geologic information, groundwater elevations, and stream stage elevations indicate that there is a hydraulic connection between shallow groundwater and the river. Plainwell Dam was found to have an influence on groundwater flow, particularly in the southeast portion of the Site.

Analytical Results:

In total, 62 residual/soil samples were collected within the landfill from a total of 16 test pits, six soil borings, and a buried steel drum, and analyzed for PCBs, volatile organic compounds (VOC's), semi-volatile organic compounds (SVOC's), inorganic compounds, pesticides, and dioxins and furans. Elevated concentrations of PCB's were detected in 31 samples, with a maximum concentration of 140 milligrams per kilogram (mg/Kg). Numerous inorganic compounds and pesticides were detected in several samples above applicable cleanup criteria, whereas benzene, toluene, ethylbenzene, xylene isomers, and pentachlorophenol were detected above industrial and commercial cleanup criteria in isolated instances. Dioxins and furans were detected in each of the three samples analyzed for these parameters. Total toxic equivalency (TEQ) concentrations of dioxins and furans ranged from approximately 141

nanograms per kilogram (ng/Kg) to 2,241 ng/Kg. The maximum TEQ for dioxin detected (2,241 ng/Kg) exceeds state of Michigan Residential, Commercial I, Commercial II, Commercial III, and Industrial Criteria.

Soil/residual samples were collected from soil and monitor well borings that were conducted outside the landfill perimeter, and from two sediment cores collected in the former powerhouse discharge channel immediately adjacent to the east side of the landfill. Elevated PCB concentrations were reported in 24 of the 45 samples analyzed, including both samples collected from the former powerhouse discharge channel, with a maximum concentration of 158 mg/Kg. Elevated concentrations of inorganic compounds were also detected in several samples at levels exceeding applicable criteria. Trace concentrations of VOC's, SVOC's, and pesticides were also reported.

Attachments 2 and 3 include analytical data tables from Technical Memorandum 8 and the RI report that summarizes the soil/residual sample results. Figure 3 depicts the sample locations, with the exception of the sediment samples that were collected in the former powerhouse discharge channel at a location approximately 25 feet northeast of DB-14. Figure 3 also illustrates the approximate extent of visible paper residuals that are contiguous with the landfill.

In 1993, groundwater samples were collected from 15 monitor wells and analyzed for VOC's, SVOC's, inorganic compounds, pesticides, and PCB's. PCB's were not detected and all other results were either non-detect or below Industrial and Commercial Drinking Water Criteria and Groundwater Surface Water Interface (GSI) Criteria, with the exception of bis(2-Ethylhexyl) phthalate, which was detected in groundwater at a concentration of 290 micrograms per liter (ug/L). In 1995, a second round of groundwater samples was collected from each monitor well. Groundwater analyses was limited to PCB's only, and results indicated non-detectable concentrations.

Three leachate wells were sampled in 1993 and again in 1995. Analytical results from the 1993 sampling event indicate that trace concentrations of various VOC's, SVOC's, and Aldrin were present as well as an elevated concentration of toluene (680 ug/L) in leachate collected from LH-2. The toluene concentration exceeds GSI Criteria. In 1995 leachate samples were analyzed only for PCB's. Results indicate that leachate collected from leachate well LH-1 had PCB concentrations of 1.4 ug/L.